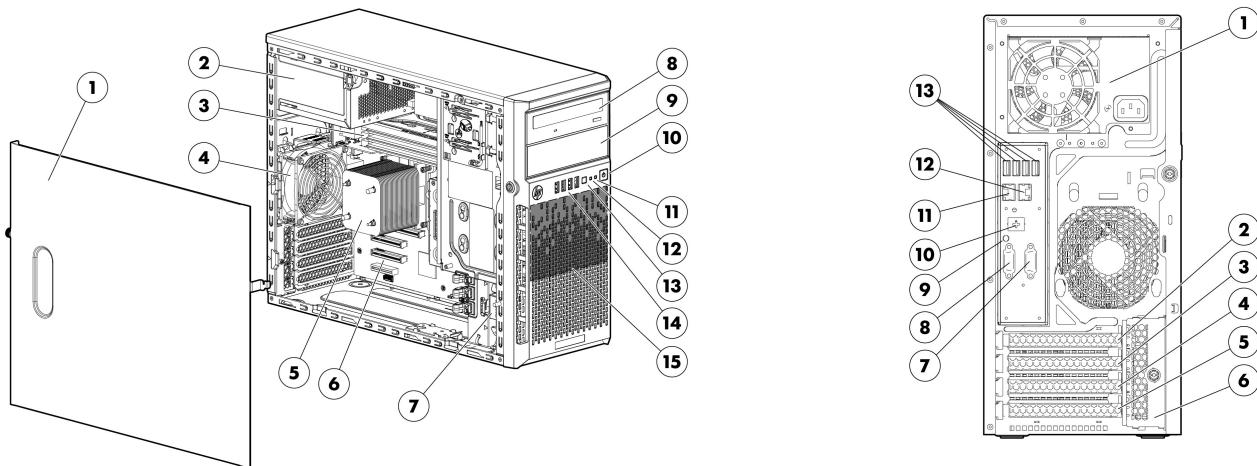


### Overview

The HP ProLiant ML310e Gen8 is perfect entry server for growing business. It provides an affordable and steadfast solution to small and medium business for small and medium business who are budget conscious and who have no in-house IT resources.

With proven ProLiant reliability and the support for the latest Intel Xeon®, Core i3, Pentium G series processors and RPS with 2 NICs. A mix of PCI-Express slots, DIMM slots and server options delivers the expandability needed. Integrated iLO4 remote management drives down the operational costs by reducing the number of physical visits. Optional TPM provides for additional level of security. The standard power supply and RPS both are available now with more efficient and reduces power consumption further. Intelligent Provisioning OS install utility running from on-board flash memory.



#### Front View:

1. Quick removal access panel
2. Power Supply
3. Four DIMM slots
4. System fan
5. Processor Heatsink
6. Four (4) PCIe expansion slots
7. PCI Fan
8. Half Height SATA DVD-ROM or DVD RW Optical Drive
9. Media Drive Blank
10. Power Button
11. NIC Activity LED
12. System Health
13. UID LED button
14. Four (4) USB connectors
15. Four (4) LFF or Eight (8) SFF SAS/SATA HDD cage

#### Rear View:

1. Power supply
2. Slot 4 PCIe16
3. Slot 3 PCIe8
4. Slot 2 PCIe8
5. Slot 1 PCIe4
6. PCIe card bracket
7. Serial Connector
8. Video Connector
9. UID LED Button
10. iLO Dedicated Lan Port (optional)
11. NIC Connector 1 (shared management)
12. NIC Connector 2
13. Four (4) USB Connectors

### Standard Features

**NOTE:** For the Standard Features shipped in the "Factory Integrated Models", please see the "Configuration Information - Factory Integrated Models" section.

#### Processor

One of the following depending on Model

##### Entry Processors

**NOTE:** Intel® Celeron® G540 supports up to 1066MHz DDR3 memory speeds. Intel® Pentium® G860 supports up to 1333 MHz DDR3 memory speeds.

Celeron processor, performance for 1600MHz memory is clocked down to 1066MHz.

Pentium processor, performance for 1600MHz memory is clocked down to 1333MHz.

Intel® Celeron® G540 (2.5GHz/2-core/2MB/65W) Processor

Intel® Pentium® G2120 (3.1GHz/2-core/3MB/55W) Processor

##### Base Processors

**NOTE:** All support up to 1600MHz DDR3 memory speeds.

Intel® Core™ i3-3220 (3.3GHz/2-core/3MB/65W, HT) Processor

Intel® Core™ i3-3240 (3.4GHz/2-core/3MB/65W, HT) Processor

##### Performance Processors

**NOTE:** All support up to 1600MHz DDR3 memory speeds.

Intel® Xeon® E3-1220Lv2 (2.3GHz/2-core/3MB/17W, HT)

Intel® Xeon® E3-1220v2 (3.1GHz/4-core/8MB/69W)

Intel® Xeon® E3-1230v2 (3.3GHz/4-core/8MB/69W, HT)

Intel® Xeon® E3-1240v2 (3.4GHz/4-core/8MB/69W, HT)

Intel® Xeon® E3-1270v2 (3.5GHz/4-core/8MB/69W, HT)

Intel® Xeon® E3-1280v2 (3.6GHz/4-core/8MB/69W, HT)

**NOTE:** HT indicates that the processor model supports Intel® Hyper-Threading Technology.

**NOTE:** DDR3 speed is the maximum memory speed of the processor. Actual memory speed may depend on the quantity and type of DIMMs installed (options for 1600, 1333, 1066MHz).

#### Cache Memory

One of the following depending on Model

8MB (1 x 8MB) L3 Cache

**NOTE:** For Quad-core Xeon processors.

3MB (1 x 3MB) L3 Cache

**NOTE:** For Dual-core Xeon, Core i3, and Pentium processors.

2MB (1 x 2MB) L3 Cache

**NOTE:** For Dual-core Celeron processors.

**NOTE:** All processor models above list the L3 Cache associated with that particular processor.

#### Chipset

Intel® C204 Chipset

**NOTE:** For more information regarding Intel® chipsets, please see the following URL:  
<http://www.intel.com/products/server/chipsets/>.

### Standard Features

<b>Upgradeability</b>	Upgradeable to 4 cores <b>NOTE:</b> Total 2 or 4 cores
	Up to 4 DIMM slots available for higher memory capacity
	Up to 8 SFF Hard Drive Bays; Or 4 LFF Hard Drive Bays
	1 x8 and 1 x16 PCIe 3.0 (depends on processor) and 1 x8 and 1x4 PCIe 2.0 I/O slots for additional communications and storage expansion
	Redundant Power Supply
	Optical Drive Bay (up to 2)
<b>On System Management Processor</b>	HP iLO (Firmware: HP iLO4) <b>NOTE:</b> For more information, visit: <a href="http://www.hp.com/go/ilo">http://www.hp.com/go/ilo</a>
<b>Memory Protection</b>	ECC
<b>Memory</b> One of the following depending on model	Type HP SmartMemory DDR3 Unbuffered (UDIMM)
	DIMM Slots Available 4
	Standard (Base Models) 2GB (1 x 2GB) PC3-12800E DDR3 UDIMM
	Standard (Performance Models) 4GB (1 x 4GB) PC3-12800E DDR3 UDIMM
	Maximum Capacity (UDIMM) 32 GB (4 x 8 GB UDIMM @1600MHz)
	<b>NOTE:</b> HP memory from previous generation servers are not fully compatible with the HP ProLiant ML310e Gen8 Server.
	<b>NOTE:</b> Depending on the memory configuration and processor model, the memory speed may run at 1600MHz, 1333MHz, or 1066MHz. Please see Memory Population Table or the Online Memory Configuration Tool at: <a href="http://www.hp.com/go/ddr3memory-configurator">www.hp.com/go/ddr3memory-configurator</a> .
<b>Network Controller</b>	HP Ethernet 1Gb 2-port 330i Adapter

### Standard Features

#### Expansion Slots

Expansion Slot #	Technology	Bus Width*	Connector Width	Form Factor	Notes
4	PCIe 3.0	X8	X16	Full Length/Full Height	
3	PCIe 3.0	X8	X8	Full Length/Full Height	
2	PCIe 2.0	X4	x8	Full Length/Full Height	
1	PCIe 2.0	X1	X4	Half Length/Full Height	

\*Indicates the number of physical electrical lanes running to the connector.

**NOTE:** PCIe Gen3 support with Intel Xeon E3-1200v2 family only.

#### HP Server ROM

HP ROM (Read Only Memory) is now digitally signed using HP's Corporate Signing Service. This signature is verified before the flash process starts, reducing accidental programming and preventing malicious efforts to corrupt system ROM.

HP ROM provides for essential initialization and validation of hardware components before control is passed to the customer-installed operating system. The ROM also provides the capability of booting from various fixed media (HDD, CD-ROM) and removable media (USB), to continue operation to the operating system.

HP ROM performs very early configuration of the video controller, to allow monitoring of initialization progress via an attached monitor. If configuration or hardware errors are discovered during this early phase of hardware initialization, suitable messages are now displayed on the connected monitor. Additionally, these configuration or hardware errors are logged to the Integrated Management Log (IML) to assist in diagnosis.

HP's ProLiant ROM is used to configure the following:

- Processor and chipset status registers
- System memory, memory map, and memory initialization
- System hardware configuration (Integrated PCI devices and optional PCIe cards).
- Customer-specific BIOS configuration (using the HP ROM-Based Setup Utility (RBSU)).

**NOTE:** For further information, please refer to HP's RBSU (ROM based setup utility) user guide: [www.hp.com/support/rbsu](http://www.hp.com/support/rbsu).

### Standard Features

<b>Storage Controller</b>	HP Dynamic Smart Array B120i Controller  <b>NOTE:</b> Supports 3.0Gb/s SATA <b>NOTE:</b> Supports RAID 0/1/10 only. No FBWC support. For FBWC, a standup Smart Array Controller card must be configured. <b>NOTE:</b> For set up instructions, please refer to the HP ProLiant ML300 series server user guide. <b>NOTE:</b> For general information about HP Smart Array B120i SATA RAID Controller, please go to: <a href="http://h18004.www1.hp.com/products/servers/proliantstorage/arraycontrollers/smartarrayb120i/index.html">http://h18004.www1.hp.com/products/servers/proliantstorage/arraycontrollers/smartarrayb120i/index.html</a>
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<b>Internal Storage Devices</b>	Optical Drives <b>One of the following depending on model</b>	HP Half-Height SATA DVD-ROM Optical Drive HP Half-Height SATA DVD-RW Optical Drive
	Hard Drives	1x500GB NHP LFF SATA HDD included in Entry Model None ship standard in Base and Performance Models
	Hard Drive Bays <b>One of the following depending on model</b>	4 LFF drive bays (non-hot-plug and hot-plug) 8 SFF hot-plug drive bays  <b>NOTE:</b> HP ProLiant ML310e Series servers offer both SFF, and LFF versions in CTO. <b>NOTE:</b> All Pre-configured Models come populated with some hard drive blanks installed. Should the customer need additional hard drive blanks, they can order more using either P/N 666987-B21: HP SFF Gen8 Hard Drive Blank Kit or P/N 666986-B21: HP LFF Gen8 Hard Drive Blank Kit.

<b>Maximum Internal Storage</b> <b>One of the following depending on model</b>	Hot Plug LFF SAS	12TB	4 x 3TB
	Hot Plug LFF SATA	12TB	4 x 3TB
	Hot Plug SFF SAS	8TB	8x 1 TB
	Hot Plug SFF SATA	8TB	8 x 1TB
	Non Hot Plug LFF SAS	2.4TB	4 x 600GB
	Non Hot Plug LFF SATA	12TB	4 x 3TB
	Hot Plug SFF SATA SSD	800GB	8 x 100GB
	Hot Plug LFF SATA SSD	400GB	4 x 100GB

<b>Interfaces</b>	Serial	1 (rear)
	Video	1 (rear)
	Network RJ-45 (Ethernet)	2 (1 shared for HP Integrated Lights-Out)
	HP iLO Remote	1 Gb Dedicated (Optional)
	Management Network Port	
	SD slot	1 (internal)  <b>NOTE:</b> The SD slot is not a hot-pluggable device. Customers should not attempt to plug an SD card into the SD slot while the server is powered.
	USB	10 (4 front, 4 rear, 1 internal standard USB and 1 internal USB header)

### Standard Features

<b>Industry Standard Compliance</b>	ACPI 2.0b Compliant PCIe 3.0 Compliant PXE Support WOL Support Microsoft® Logo certifications USB 2.0 Support
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**Server Power Cords** The ProLiant ML310e Gen8 server is a tower server that ships standard with a 6' NEMA power cord that allows connection to wall outlets in a home or office. If customers require additional local power cords, they can check the power cord matrix for the appropriate sku. Please see the following power cord matrix: <http://www.hp.com/go/powercordmatrix>. To install the ML310e Gen8 server in a rack, the Tower to Rack Conversion kit (417705-B21) is required as well as a PDU power cord (416151-B21) to connect to a PDU in a data center rack.

**Power Specifications** To review typical system power requirements, use the HP Power Advisor which is available via download at URL: [www.hp.com/go/proliant-energy-efficient](http://www.hp.com/go/proliant-energy-efficient) or [www.hp.com/go/hppoweradvisor](http://www.hp.com/go/hppoweradvisor).

**NOTE:** Power Specification and Technical Content for supported power supplies can be found at: [http://h18000.www1.hp.com/products/quickspecs/14209\\_div/14209\\_div.html](http://h18000.www1.hp.com/products/quickspecs/14209_div/14209_div.html)

**Power Supplies** The ML310e Gen8 supports two power supplies, a 350W Multi-Output Power Supply and a 460W Common Slot Gold Power Supply.

The 350W Multi-Output Power Supply is a non-redundant power supply with an efficiency rating of 85%.

HP's Common Slot (CS) power supplies allow for commonality of power supplies across a wide range of ProLiant and Integrity servers, as well as HP Storage solutions, and are designed to provide the highest power supply efficiency without degrading system performance. HP CS power supplies are tested by the Electric Power Research Institute (EPRI) and certified through the ECOS 80 Plus power supply program. The 460W HP CS power supply option provides an efficiency rating of up to 92%. All HP Common Slot power sources are UL, CE Mark Compliant, hot-plug and support redundant configurations.

**NOTE:** Mixing of power supplies in the same server is not supported. All power supplies must be of the same output and efficiency rating. If non-matched power supplies are inserted you will get errors and operation will fail.

It is highly recommended that you use the HP Power Advisor in defining the "Right-Size" power supply for your needs. HP Power Advisor can be accessed at: [www.hp.com/go/hppoweradvisor](http://www.hp.com/go/hppoweradvisor).

**NOTE:** The 80 PLUS program is a unique forum that unites electric utilities, the computer industry, and consumers in an effort to bring energy efficient technology solutions to the marketplace. 80 Plus independently tests power supply efficiency and publicly posts the results on [80Plus.org](http://80Plus.org).

Redundant Power: Optional (1 + 1 redundant) power supplies can be purchased through power supply option kits (see Power Supplies for part numbers).

**NOTE:** Power Specification and Technical Content for supported power supplies can be found at: [http://h18000.www1.hp.com/products/quickspecs/14209\\_div/14209\\_div.html](http://h18000.www1.hp.com/products/quickspecs/14209_div/14209_div.html)

### Standard Features

[http://h18000.www1.hp.com/products/quickspecs/14209\\_na/14209\\_na.html](http://h18000.www1.hp.com/products/quickspecs/14209_na/14209_na.html)

<b>System Fans</b>	One (1) Non-redundant system fan ships standard One (1) Non-redundant PCIe fan ships standard
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<b>Operating Systems and Virtualization Software Support for ProLiant Servers</b>	Microsoft Windows Server Red Hat Enterprise Linux (RHEL) SUSE Linux Enterprise Server (SLES) VMware
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**NOTE:** For more information on HP's Certified and Supported ProLiant Servers for OS and Virtualization Software and latest listing of software drivers available for your server, please visit our Support Matrix at: <http://www.hp.com/go/ossupport> and our driver download page: <http://www.hp.com/support/ML310eGen8>.

<b>Graphics</b>	Integrated Matrox G200 video standard <ul style="list-style-type: none"><li>• 1280 x 1024 (32 bpp)</li><li>• 1920 x 1200 (16 bpp)</li></ul>
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<b>Form Factor</b> <b>One of the following depending on model</b>	Micro ATX Tower (4U) chassis with feet/bezel: 14.5" (36.82cm) Height x 6.89" (17.5cm) Width x 18.71" (47.52cm) Length 8 SFF Drive Bay Cage: 4.6" (11.72cm) Height x 5.74" (14.57cm) Width x 4.79" (12.16cm) Length 4 LFF Drive Bay Cage: 4.6" (11.72cm) Height x 5.74" (14.57cm) Width x 6.90" (17.54cm) Length
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<b>On System Management</b>	HP iLO Management Engine	HP iLO Management Engine (iLO ME) is a complete set of embedded management features supporting the complete lifecycle of the server, from initial deployment, through ongoing management, to service alerting and remote support. HP iLO Management Engine comes standard on all HP ProLiant Gen8 Servers. HP iLO Management Engine portfolio includes:
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- **HP Agentless Management:** With HP iLO Management Engine in every HP ProLiant Gen8 server, the base hardware monitoring and alerting capability is built into the system (running on the HP iLO chipset) and starts working the moment that a power cord and an Ethernet cable is connected to the server.
- **HP Active Health System:** HP Active Health System is an essential component of the HP iLO Management Engine. It provides customers with: Diagnostics tools/scanners wrapped into one; Always on, continuous monitoring for increased stability and shorter downtimes; Rich configuration history; Health and service alerts; Easy export and upload to Service and Support.

### Standard Features

- **HP Remote Support:** Embedded Remote Support functions builds on the already established HP Insight Remote Support application that can run either on a stand-alone central system, or as a plug-in to HP Systems Insight Manager. Key parts of that technology now are part of the HP iLO Management Engine and are ready to start working for you, after a few keystrokes on a single activation screen.
- **HP Intelligent Provisioning (previously known as SmartStart):** HP Intelligent Provisioning offers the ability for out-of-the box single-server deployment and configuration without the need for media. The new HP Intelligent Provisioning takes strengths from products like the former SmartStart, ProLiant Support Packs, and Firmware DVD, then enhances them with Smart Update Manager and driver and firmware updates via the Service Pack for ProLiant (SPP). Intelligent Provisioning provides:
  - The latest ease of use features and places them where you can use them instantly: on the system board, thereby replacing the 2 SmartStart CDs and the Firmware DVD with embedded deployment capability for Gen8 servers. This integrated administrator has everything you need for painless single server system setup and deployment. Best of all, this capability is completely Agentless for improved performance.
  - Deployment Settings allows editing a collection of configuration and deployment settings, saving them in a portable package, and deploying them to the server or multiple servers remotely via iLO. In summary, this feature provides the ability to automatically configure and install remote ProLiant systems using the resulting deployment settings.
- **HP iLO Advanced** - For customers wanting advanced functionality, such as graphical remote console, multi-user collaboration, and video record/playback can be activated with the optional HP iLO Advanced or HP iLO Advanced for BladeSystem licenses. The Advanced licensed features offer sophisticated remote administration of servers in dynamic data center and remote locations and can help significantly reduce cost associated with IT-related travel and unplanned downtime. Also with the new HP iLO is the ability to access, deploy, and manage your server anytime from anywhere with your Smartphone device

**NOTE:** For more information, visit:  
<http://www.hp.com/go/ilomanagementengine>

### Standard Features

<b>HP Insight Management</b>	HP Service Pack for ProLiant (SPP)	<p>HP Service Pack for ProLiant (SPP) and HP Smart Update Manager (HP SUM) version 5 provide a new, comprehensive approach to firmware and system software maintenance. Together they provide better operating stability and ensure maximum uptime. The SPP will be updated at a predictable cadence, typically coinciding with new HP server hardware launches. By enabling all firmware to be updated online and integrating firmware and system software updates in one operation HP SUM and the SPP offer faster updates of individual servers and dramatically faster updates of entire BladeSystem enclosures. Further improving system uptime and stability is the fact that HP provides 12 months of support on each Service Pack for ProLiant.</p> <p>The user experience around HP SUM and the SPP has been improved in several ways, starting with the web download. A single web page provides access to a single download containing both the latest version of HP SUM version 5 and the latest SPP. Optional smaller subsets with only specific types of servers or specific operating systems are offered to save on download time. The HP SUM application has been re-written to provide a more straightforward, intuitive user interface that guides the user through the steps of discovery, analyses and update, providing comprehensive information on available updates, criticality and interdependencies. This information is also available in reports. By providing the option of multiple local or shared repositories which can be easily updated from hp.com, HP SUM provides the tools to optimize stability and consistency throughout the company. While HP SUM and the SPP will recommend the combinations of firmware and system software that HP has found to be the best practice, the application gives customers the flexibility to set their own specific baseline.</p> <p>The Service Pack for ProLiant has been rigorously tested with specific attention for interaction between firmware, drivers and agents both within the server as well as in interaction with the BladeSystem enclosure components (Onboard Administrator and Virtual Connect). This testing ensures the highest quality as well as providing the input for HP SUM to deploy updates taking into account all interdependencies, when determining the correct updates and order of update deployment.</p> <p><b>NOTE:</b> The Service Pack for ProLiant (which includes HP SUM 5) can be downloaded from <a href="http://www.hp.com/go/spp/download">www.hp.com/go/spp/download</a>. More information can be found: <a href="http://www.hp.com/go/spp">www.hp.com/go/spp</a> and <a href="http://www.hp.com/go/hpsum">http://www.hp.com/go/hpsum</a></p>
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<b>Security</b>	Power-on password Administrator's password
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### Standard Features

#### Warranty

This product is covered by a global limited warranty and supported by HP Services and a worldwide network of HP Authorized Channel Partners resellers. Hardware diagnostic support and repair is available for three years from date of purchase. Support for software and initial setup is available for 90 days from date of purchase. Enhancements to warranty services are available through HP Care Pack services or customized service agreements. Hard drives have either a one year or three year warranty; refer to the specific hard drive QuickSpecs for details.

**NOTE:** Server Warranty includes 1-Year Parts, 1-Year Labor, 1-Year Onsite support with next business day response. (3-1-1 warranty offered in Brazil only). Warranty repairs may be accomplished through the use of Customer Self Repair (CSR) parts. These parts fall into two categories: 1) Mandatory CSR parts are designed for easy replacement. A travel and labor charge will result when customers decline to replace a Mandatory CSR part; 2) Optional CSR parts are also designed for easy replacement but may involve added complexity. Customers may choose to have HP replace Optional CSR parts at no charge. Additional information regarding worldwide limited warranty and technical support is available at:  
<http://h18004.www1.hp.com/products/servers/platforms/warranty/index.html>

### Optional Features

#### HP Insight Management    HP Insight Control

HP Insight Control, a product option, delivers essential infrastructure management that can help save time and money by making it easy to deploy, migrate, monitor, remote control, and optimize your IT infrastructure through a single, simple management console.

Two versions of Insight Control are available, to serve environments requiring either a Linux-based or a Windows-based central management server: HP Insight Control for Linux, and HP Insight Control. See [www.hp.com/go/insightcontrol](http://www.hp.com/go/insightcontrol)

HP Insight Control includes one year of 24 x 7 HP Software Technical Support and Update Service ensuring rapid access to HP support staff and proactive delivery of software updates. For more information about this service, please visit: <http://www.hp.com/services/insight>.

#### HP iLO Advanced License for ProLiant Servers

HP iLO management processors for HP ProLiant Gen8 servers virtualizes system controls to help simplify server setup, engage health monitoring and power and thermal control, and promote remote administration. HP iLO functions out-of-the-box without additional software installation and functions regardless of the servers' state of operation. Basic system board management functions, diagnostics, and essential Lights-Out functionality ships standard across all HP ProLiant Gen8 rack, tower and blade servers. The HP iLO can be accessed from any location via a web browser and works hand-in-hand with HP Systems Insight Manager, Insight Control, and Insight Dynamics, helping customers unleash the value of the ProLiant platform and deliver the highest possible quality of IT service to the business.

Advanced functionality, such as graphical remote console, multi-user collaboration, and video record/playback can be activated with the optional HP iLO Advanced or HP iLO Advanced for BladeSystem licenses. The Advanced licensed features offer sophisticated remote administration of servers in dynamic data center and remote locations and can help significantly reduce cost associated with IT-related travel and unplanned downtime.

**NOTE:** For more information, visit: <http://www.hp.com/go/ilo>

#### HP Insight Online

HP Insight Online is a new addition to the HP Support Center for one stop, secure access to product and HP support information personalized to your IT environment. Insight Online can automatically display devices remotely monitored by HP Insight Remote Support. With Insight Online's easy navigation you can efficiently track your IT support contracts and device status from anywhere and at anytime. [www.hp.com/go/insightonline](http://www.hp.com/go/insightonline)

### Optional Features

**Factory Express Portfolio for Servers and Storage** HP Factory Express offers configuration, customization, integration and deployment services for HP servers and storage products. Customers can choose how their factory solutions are built, tested, integrated, shipped and deployed.

Factory Express offers service packages for simple configuration, racking, installation, complex configuration and design services as well as individual factory services, such as image loading, asset tagging, and custom packaging. HP products supported through Factory Express include a wide array of servers and storage: HP Integrity, HP ProLiant, HP ProLiant Server Blades, HP BladeSystem, HP 9000 servers as well as the MSAxxxx, VA7xxx, EVA, XP, rackable tape libraries and configurable network switches.

For more information on Factory Express services for your specific server model please contact your sales representative or go to: <http://www.hp.com/go/factory-express>

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### HP Enterprise Configurator

The HP eConfigure Enterprise Configurator now provides factory default racking for our HP hardware portfolio. This approach is aligned with our strategic direction to meet the needs and expectations of our valued customers. If you require "custom" rack configuration, please contact HP's Customer Business Center or an Authorized Partner for assistance. For additional information please visit:  
<http://www.hp.com/products/configurator>

### Service and Support

#### Service and Support

##### **HP Technology Services for Industry Standard Servers and BladeSystem**

Capitalizing on HP ProLiant server and HP BladeSystem capabilities requires a service partner who understands your increasingly complex business technology environment. That's why it makes sense to team up with the people who know HP infrastructure hardware and software best - the experienced professionals at HP Services.

##### **What HP ProLiant and BladeSystem Services can do for you**

HP ProLiant and BladeSystem Services can help you design, deploy, test, integrate, support, and manage IT and infrastructure solutions. This way, HP proposes services solutions that include more than just uplift of base warranty. Foundation Care services deliver scalable support-packages for HP industry-standard servers and software. You can choose the type and level of service that is most suitable for their business needs. New to this portfolio is HP Collaborative Support. If you are running business critical environments, HP offers Proactive Care or Critical Advantage. These services help deliver high levels of application availability through proactive service management and advanced technical response

You can get the support you need by choosing from one of a number of service packaged solutions we have designed to address wider set of customer support needs.

HP Technology Services meets business challenges with services offered in three support recommendations - **Optimized Care, Standard Care, and Basic Care** - available for each product group. Such support solutions enable customers to optimize technology operations, minimize risk and drive better business outcomes with easy-to-buy, easy-to-use scalable support recommendations for servers, storage, networking and software.

All three service recommendations include support services from the broader portfolio of Foundation Care and Proactive Care services.

#### Optimized Care

##### **Optimized Care: Supports maintaining servers at optimum performance availability**

###### **HP ProLiant Server Hardware Installation**

Provides for the basic hardware installation of HP branded servers, storage devices and networking options to assist you in bringing your new hardware into operation in a timely and professional manner  
<http://h20195.www2.hp.com/V2/GetPDF.aspx/5981-9356EN.pdf>

###### **HP Installation and Startup for Insight Control Software / HP SIM**

Provides for the deployment and basic configuration of HP Insight Control or HP SIM (Systems Insight Manager) on HP ProLiant ML and DL series servers or HP BladeSystem servers  
<http://h20195.www2.hp.com/v2/GetPDF.aspx/4AA0-9972ENW.pdf>

###### **3-Year HP 24x7 4 hour Response, Proactive Care or Critical Advantage**

Helps optimize your systems and delivers high levels of application availability through proactive service management and advanced technical response. A skilled Technical Manager will own your query or issue end to end until resolved, delivering a single point of contact for you

**Additional Services:** Factory Express, Education Services, Proactive Select - 30 Credits

#### Standard Care

##### **Standard Care: Service recommendation that maintains high level of server availability**

###### **HP ProLiant Server Hardware Installation**

Provides for the basic hardware installation of HP branded servers, storage devices and networking options to assist you in bringing your new hardware into operation in a timely and professional manner  
<http://h20195.www2.hp.com/V2/GetPDF.aspx/5981-9356EN.pdf>

### Service and Support

#### **HP Installation and Startup for Insight Control Software / HP SIM**

Provides for the deployment and basic configuration of HP Insight Control or HP SIM (Systems Insight Manager) on HP ProLiant ML and DL series servers or HP BladeSystem servers

<http://h20195.www2.hp.com/v2/GetPDF.aspx/4AA0-9972ENW.pdf>

#### **3-Year HP 24x7 4 hour Response, Collaborative Support**

Provides problem resolution support across the stack of HW, firmware, and HP and 3rd party SW. In case the issue is with 3rd party SW, HP does known issue resolution. If HP cannot solve the issue, it will contact the third-party vendor and create a problem incident on your behalf.

<http://h20195.www2.hp.com/V2/GetPDF.aspx/4AA3-8232ENW.pdf>

**Additional Services:** Software support service with 24X7 availability with a 2 hour response, Training courses on Microsoft, Linux (Red Hat and SUSE), VMware, and HP Insight Software, 10 Proactive Select Credits, Factory Express

<http://www8.hp.com/us/en/business-services/it-services.html?compURI=1078865>

### Basic Care

#### **Basic Care: delivers minimum recommended support service level**

##### **HP ProLiant Server Hardware Installation**

Provides for the basic hardware installation of HP branded servers, storage devices and networking options to assist you in bringing your new hardware into operation in a timely and professional manner

<http://h20195.www2.hp.com/V2/GetPDF.aspx/5981-9356EN.pdf>

##### **3-Year HP 24x7 4 hour Response, Hardware Support Onsite Service**

Provides you with rapid remote support and if required an HP authorized representative who will arrive on site any time and day of the year to begin hardware maintenance service within 4 hours of the service request being logged.

<http://h20195.www2.hp.com/V2/GetPDF.aspx/5982-6547EEE.pdf>

**Additional Services:** Factory Express, Education Services, Proactive Select - 10 Credits

### Insight Remote Support

Provides 24 X 7 remote monitoring, proactive notifications, and problem resolution. Learn more

<http://www.hp.com/go/insightremotesupport>

### HP Support Center

Personalized online support portal with access to information, tools and experts to support HP business products. Submit support cases online, chat with HP experts, access support resources or collaborate with peers. Learn more

<http://www.hp.com/go/hpsc>

HP's Support Center Mobile App\* allows you to resolve issues yourself or quickly connect to an agent for live support. Now, you can get access to personalized IT support anywhere, anytime.

HP Insight Remote Support and HP Support Center are available at no additional cost with a HP warranty, HP Care Pack or HP contractual support agreement.

**\*HP Support Center Mobile App is subject to local availability**

### Warranty / Service Coverage

For ProLiant servers and storage systems, the services cover HP-branded hardware options qualified for the server, purchased at the same time or afterward, internal to the enclosure, as well as external monitors up to 22" and tower UPS products; these items will be covered at the same service level and for the same coverage period as the server unless the maximum supported lifetime and/or the maximum usage limitation has been exceeded. Coverage of the UPS battery is not included; standard warranty terms and conditions apply.

The defective media retention service feature option applies only to Disk or eligible SSD/Flash Drives

### Service and Support

replaced by HP due to malfunction. It does not apply to any exchange of Disk or SSD/Flash Drives that have not failed. SSD/Flash Drives that are specified by HP as consumable parts and/or that have exceeded maximum supported lifetime and/or the maximum usage limit as set forth in the manufacturer's operating manual or the technical data sheet are not eligible for the defective media retention service feature option.

### For more information

To learn more on HP ProLiant servers and HP BladeSystem servers, please contact your HP sales representative or HP Authorized Channel Partner. Or visit: <http://www.hp.com/services/proliant>

### Pre-configured Models

**NOTE:** For the Standard Features shipped in the "Factory Integrated Models", please see the "Configuration Information - Factory Integrated Models" section.

**NOTE:** Pre-configured models ship with the configurations below. Options can be selected from the Core or Additional options section of this QuickSpecs.

**NOTE:** HP does not allow factory integration of options into pre-configured models. Any additional options purchased will be shipped separately.

**NOTE:** If you desire a custom configuration please see "Configuration Information - Factory Integrated Models" section of this QuickSpecs.

**NOTE:** Maximum speed supported depends on the CPU installed.

Please see Memory Population Table or the Online Memory Configuration Tool at: [www.hp.com/go/ddr3memory-configurator](http://www.hp.com/go/ddr3memory-configurator).

**NOTE:** All Pre-configured Models come populated with some hard drive blanks installed. Should the customer need additional hard drive blanks, they can order more using either P/N 666987-B21: HP SFF Gen8 Hard Drive Blank Kit or P/N 666986-B21: HP LFF Gen8 Hard Drive Blank Kit.

### Entry Models

HP ProLiant ML310e Gen8 i3-3220 1P 2GB-U Non-hot Plug LFF 350W PS Entry Server 674785-001	<b>Processor(s)</b> (1) Intel® Core® i3-3220 (3.3GHz/2-core/3MB/65W, HT) Processor
	<b>Cache Memory</b> 3MB (1 x 3MB) L3 cache
	<b>Memory</b> 2GB (1 x 2GB) PC3-12800E DDR3 UDIMM
	<b>Network Controller</b> HP Ethernet 1Gb 2-port 330i Adapter
	<b>Storage Controller</b> HP Dynamic Smart Array B120i Controller
	<b>Hard Drive</b> 1x500GB NHP LFF SATA
	<b>Internal Storage</b> 4 LFF NHP SAS/SATA HDD cage; includes 3 LFF hard drive blanks
	<b>Optical Drive</b> HP Half-Height 16x SATA DVD-ROM
	<b>Power Supply</b> HP 350W Multi-Output Power Supply <b>NOTE:</b> The standard power supply for the Entry Model is an 85% efficient Multi-Output Power Supply. It is a non-redundant, not-hot-plug power supply.
	<b>Fans</b> One (1) Non-redundant system fan ships standard One (1) Non-redundant PCIe fan ships standard
	<b>Management</b> HP iLO Management Engine (standard on shared system NIC) Optional: HP Insight Control
	<b>Form Factor</b> Micro ATX Tower (4U)
	<b>Warranty</b> Server Warranty includes 1-Year Parts, 1-Year Labor, 1-Year Onsite support with next business day response (3-1-1 warranty offered in Brazil only).

### Pre-configured Models

#### Base Models

<b>HP ProLiant ML310e Gen8 Processor(s)</b>	(1) Intel® Xeon® E3-1220v2 (3.1GHz/4-core/8MB/69W, HT) Processor
<b>E3-1220v2 1P 2GB-U Hot Plug 4 LFF 460W PS Base Server</b>	<b>Cache Memory</b> 8MB (1 x 8MB) L3 cache
674786-001	<b>Memory</b> 2GB (1 x 2GB) PC3-12800E DDR3 UDIMM
	<b>Network Controller</b> HP Ethernet 1Gb 2-port 330i Adapter
	<b>Storage Controller</b> HP Dynamic Smart Array B120i Controller
	<b>Hard Drive</b> None ship standard
	<b>Internal Storage</b> 4 LFF SAS/SATA HDD cage; includes 3 LFF hard drive blanks
	<b>Optical Drive</b> HP Half-Height 16x SATA DVD-ROM
	<b>Power Supply</b> HP 460W Common Slot Gold Hot Plug Power Supply
	<b>Fans</b> One (1) Non-redundant system fan ships standard One (1) Non-redundant PCIe fan ships standard
	<b>Management</b> HP iLO Management Engine (standard on shared system NIC) Optional: HP Insight Control
	<b>Form Factor</b> Micro ATX Tower (4U)
	<b>Warranty</b> Server Warranty includes 1-Year Parts, 1-Year Labor, 1-Year Onsite support with next business day response (3-1-1 warranty offered in Brazil only).

#### Performance Models

**NOTE:** These Models are Energy Star Certified.

<b>HP ProLiant ML310e Gen8 Processor(s)</b>	(1) Intel® Xeon® E3-1240v2 (3.4GHz/4-core/8MB/69W, HT) Processor
<b>E3-1240v2 1P 4GB-U Hot Plug SATA 4 LFF 460W PS Perf Svr</b>	<b>Cache Memory</b> 8MB (1 x 8MB) L3 cache
674787-001	<b>Memory</b> 4GB (1 x 4GB) PC3-12800E DDR3 UDIMM
	<b>Network Controller</b> HP Ethernet 1Gb 2-port 330i Adapter
	<b>Storage Controller</b> HP Dynamic Smart Array B120i Controller
	<b>Hard Drive</b> None ship standard
	<b>Internal Storage</b> 4 LFF SAS/SATA HDD cage; includes 3 LFF hard drive blanks
	<b>Optical Drive</b> HP Half-Height 16x SATA DVD-RW
	<b>Power Supply</b> HP 460W Common Slot Gold Hot Plug Power Supply
	<b>Fans</b> One (1) Non-redundant system fan ships standard One (1) Non-redundant PCIe fan ships standard
	<b>Management</b> HP iLO Management Engine (standard on shared system NIC) Optional: HP Insight Control
	<b>Energy Star</b> Meets Energy Star requirements
	<b>Form Factor</b> Micro ATX Tower (4U)
	<b>Warranty</b> Server Warranty includes 1-Year Parts, 1-Year Labor, 1-Year Onsite support with next business day response (3-1-1 warranty offered in Brazil only).

### Smart Buys

<b>HP ProLiant ML310e Gen8 E3-1220v2 1P 4GB-U Hot Plug 4 LFF 350W PS Server/S-Buy 686232-S01</b>	<b>Processor(s)</b>	(1) Intel® Xeon® E3-1220v2 (3.1GHz/4-core/8MB/69W, HT) Processor
	<b>Cache Memory</b>	8MB (1 x 8MB) L3 cache
	<b>Memory</b>	4GB (1 x 4GB) PC3-12800E DDR3 UDIMM
	<b>Network Controller</b>	HP Ethernet 1Gb 2-port 330i Adapter
	<b>Storage Controller</b>	HP Dynamic Smart Array B120i Controller
	<b>Hard Drive</b>	None ship standard
	<b>Internal Storage</b>	4 LFF SAS/SATA HDD cage; includes 3 LFF hard drive blanks
	<b>Optical Drive</b>	HP Half-Height SATA DVD-RW
	<b>Power Supply</b>	HP 350W Multi-Output Power Supply
	<b>Fans</b>	One (1) Non-redundant system fan ships standard One (1) Non-redundant PCIe fan ships standard
	<b>Accessories</b>	USB Keyboard and Mouse ship standard
	<b>Management</b>	HP iLO Management Engine
	<b>Form Factor</b>	Micro ATX Tower (4U)
	<b>Warranty</b>	Server Warranty includes 1-Year Parts, 1-Year Labor, 1-Year Onsite support with next business day response

<b>HP ProLiant ML310e Gen8 E3-1220v2 1P 4GB-U Non-Hot Plug 4 LFF 350W PS Server/S-Buy 686233-S01</b>	<b>Processor(s)</b>	(1) Intel® Xeon® E3-1220v2 (3.1GHz/4-core/8MB/69W, HT) Processor
	<b>Cache Memory</b>	8MB (1 x 8MB) L3 cache
	<b>Memory</b>	4GB (1 x 4GB) PC3-12800E DDR3 UDIMM
	<b>Network Controller</b>	HP Ethernet 1Gb 2-port 330i Adapter
	<b>Storage Controller</b>	HP Dynamic Smart Array B120i Controller
	<b>Hard Drive</b>	(1) 500GB 6G SATA 7.2k 3.5in Non Hot Plug MDL HDD
	<b>Internal Storage</b>	4 LFF SAS/SATA HDD cage
	<b>Optical Drive</b>	HP Half-Height SATA DVD-RW
	<b>Power Supply</b>	HP 350W Multi-Output Power Supply
	<b>Fans</b>	One (1) Non-redundant system fan ships standard One (1) Non-redundant PCIe fan ships standard
	<b>Accessories</b>	USB Keyboard and Mouse ship standard
	<b>Management</b>	HP iLO Management Engine
	<b>Form Factor</b>	Micro ATX Tower (4U)
	<b>Warranty</b>	Server Warranty includes 1-Year Parts, 1-Year Labor, 1-Year Onsite support with next business day response

### Smart Buys

<b>HP ProLiant ML310e Gen8 E3-1230v2 1P 8GB-U Hot Plug 4 LFF 350W PS Server/S-Buy 686234-S01</b>	<b>Processor(s)</b>	(1) Intel® Xeon® E3-1230v2 (3.3GHz/4-core/8MB/69W, HT)
	<b>Cache Memory</b>	8MB (1 x 8MB) L3 cache
	<b>Memory</b>	8GB (2 x 4GB) PC3-12800E DDR3 UDIMM
	<b>Network Controller</b>	HP Ethernet 1Gb 2-port 330i Adapter
	<b>Storage Controller</b>	HP Dynamic Smart Array B120i Controller
	<b>Hard Drive</b>	None ships standard
	<b>Internal Storage</b>	4 LFF SAS/SATA HDD cage; 3 LFF Hard Drive Blanks
	<b>Optical Drive</b>	HP Half-Height SATA DVD-RW
	<b>Power Supply</b>	HP 350W Multi-Output Power Supply
	<b>Fans</b>	One (1) Non-redundant system fan ships standard One (1) Non-redundant PCIe fan ships standard
	<b>Accessories</b>	USB Keyboard and Mouse ship standard
	<b>Management</b>	HP iLO Management Engine
	<b>Form Factor</b>	Micro ATX Tower (4U)
	<b>Warranty</b>	Server Warranty includes 1-Year Parts, 1-Year Labor, 1-Year Onsite support with next business day response

<b>HP ProLiant ML310e Gen8 E3-1240v2 1P 8GB-U Hot Plug 8 SFF 460W PS Server/S-Buy 686235-S01</b>	<b>Processor(s)</b>	(1) Intel® Xeon® E3-1240v2 (3.4GHz/4-core/8MB/69W, HT)
	<b>Cache Memory</b>	8MB (1 x 8MB) L3 cache
	<b>Memory</b>	8GB (2 x 4GB) PC3-12800E DDR3 UDIMM
	<b>Network Controller</b>	HP Ethernet 1Gb 2-port 330i Adapter
	<b>Storage Controller</b>	HP Smart Array P420/1GB FBWC 6Gb 2-ports Int SAS Controller
	<b>Hard Drive</b>	None ships standard
	<b>Internal Storage</b>	8 SFF SAS/SATA HDD cage; 7 SFF Hard Drive Blanks
	<b>Optical Drive</b>	HP Half-Height SATA DVD-RW
	<b>Power Supply</b>	HP 460W Common Slot Gold Hot Plug Power Supply Kit
	<b>Fans</b>	One (1) Non-redundant system fan ships standard One (1) Non-redundant PCIe fan ships standard
	<b>Accessories</b>	USB Keyboard and Mouse ship standard
	<b>Management</b>	HP iLO Management Engine
	<b>Form Factor</b>	Micro ATX Tower (4U)
	<b>Warranty</b>	Server Warranty includes 1-Year Parts, 1-Year Labor, 1-Year Onsite support with next business day response

### Configuration Information - Factory Integrated Models

**NOTE:** This section lists some of the steps required to configure a Factory Integrated Model. To ensure only valid configurations are ordered, HP recommends the use of an HP approved configurator. Contact your local sales representative for information on configurable product offerings and requirements.

**NOTE:** Factory Integrated Models must start with a CTO Server.

**NOTE:** Configure-to-order (CTO) servers must start with a CTO Chassis.

**NOTE:** FIO indicates that this option is only available as a factory installable option.

**NOTE:** All Factory Integrated Models will be populated with sufficient hard drive blanks based on the number of initial hard drives ordered with the server.

### Step 1: Base Configuration (choose one of the following configurable models)

#### HP Models

HP ProLiant ML310e Gen8 Hot Plug 4 LFF Configure-to-order Server

675241-B21

#### Factory Integrated Model ships with:

HP Ethernet 1Gb 2-port 330i Adapter

HP iLO Management Engine (standard on shared system NIC)

HP Dynamic Smart Array B120i Controller (RAID 0/1/10)

4 ports for HDD

**NOTE:** For set up instructions for HP Dynamic Smart Array B120i Controller please refer to the HP ProLiant ML300 series server user guide.

**NOTE:** For general information about HP Dynamic Smart Array B120i Controller, please visit: <http://h18004.www1.hp.com/products/servers/proliantstorage/arraycontrollers/smartarrayb120i/index.html>

Hot-Plug SAS/SATA 4 port cable

PCA Power Cord

Micro ATX Tower (4U)

HP ProLiant ML310e Gen8 Hot Plug 8 SFF Configure-to-order Server

675242-B21

#### Factory Integrated Model ships with:

HP Ethernet 1Gb 2-port 330i Adapter

HP iLO Management Engine (standard on shared system NIC)

Standup HP Smart Array Controller or Host Bus Adapter required

PCA Power Cord

Micro ATX Tower (4U)

HP ProLiant ML310e Gen8 Non-hot Plug 4 LFF Configure-to-order Server

675240-B21

#### Factory Integrated Model ships with:

HP Ethernet 1Gb 2-port 330i Adapter

HP iLO Management Engine (standard on shared system NIC)

HP Dynamic Smart Array B120i Controller (RAID 0/1/10)

4 ports for HDD

**NOTE:** For set up instructions for HP Dynamic Smart Array B120i Controller please refer to the HP ProLiant ML300 series server user guide

**NOTE:** For general information about HP Dynamic Smart Array B120i Controller, please visit: <http://h18004.www1.hp.com/products/servers/proliantstorage/arraycontrollers/smartarrayb120i/index.html>

Nonhot-plug SAS/SATA 4 port cable

PCA Power Cord

Micro ATX Tower (4U)

### Configuration Information - Factory Integrated Models

#### Step 2: Choose Required Options (only one of the following from each list unless otherwise noted)

##### HP Processors

###### Entry Processors

**NOTE:** Intel® Celeron® G540 supports up to 1066MHz DDR3 memory speeds. Intel® Pentium® G860 support up to 1333 MHz DDR3 memory speeds  
Celeron processor, performance for 1600MHz memory is clocked down to 1066MHz.  
Pentium processor, performance for 1600MHz memory is clocked down to 1333MHz.

HP ML310e Gen8 Intel® Celeron G540 (2.5GHz/2-core/2MB/65W) FIO Processor Kit	682804-L21
HP ML310e Gen8 Intel® Pentium® G2120 (3.1GHz/2-core/3MB/55W) FIO Processor Kit	703746-L21

###### Base Processors

**NOTE:** All support up to 1600MHz DDR3 memory speeds.

HP ML310e Gen8 Intel® Core™ i3-3220 (3.3GHz/2-core/3MB/55W) FIO Processor Kit	700582-L21
HP ML310e Gen8 Intel® Core™ i3-3240 (3.4GHz/2-core/3MB/55W) FIO Processor Kit	700580-L21

###### Performance Processors

**NOTE:** All support up to 1600MHz DDR3 memory speeds.

HP ML310e Gen8 Intel® Xeon® E3-1220Lv2 (2.3GHz/2-core/3MB/17W) FIO Processor Kit	701433-L21
HP ML310e Gen8 Intel® Xeon® E3-1220v2 (3.1GHz/4-core/8MB/69W) FIO Processor Kit	682812-L21
HP ML310e Gen8 Intel® Xeon® E3-1230v2 (3.3GHz/4-core/8MB/69W) FIO Processor Kit	682814-L21
HP ML310e Gen8 Intel® Xeon® E3-1240v2 (3.4GHz/4-core/8MB/69W) FIO Processor Kit	682816-L21
HP ML310e Gen8 Intel® Xeon® E3-1270v2 (3.5GHz/4-core/8MB/69W) FIO Processor Kit	682818-L21
HP ML310e Gen8 Intel® Xeon® E3-1280v2 (3.6GHz/4-core/8MB/69W) FIO Processor Kit	682820-L21

##### HP Memory

###### Unbuffered with ECC DIMMs (UDIMMs)

HP 2GB (1x2GB) Single Rank x8 PC3-12800E (DDR3-1600) Unbuffered CAS-11 Memory Kit	669320-B21
HP 2GB (1x2GB) Single Rank x8 PC3L-10600E (DDR3-1333) Unbuffered CAS-9 Low Voltage Memory Kit	647905-B21
HP 4GB (1x4GB) Dual Rank x8 PC3-12800E (DDR3-1600) Unbuffered CAS-11 Memory Kit	669322-B21
HP 4GB (1x4GB) Dual Rank x8 PC3L-10600E (DDR3-1333) Unbuffered CAS-9 Low Voltage Memory Kit	647907-B21
HP 8GB (1x8GB) Dual Rank x8 PC3-12800E (DDR3-1600) Unbuffered CAS-11 Memory Kit	669324-B21
HP 8GB (1x8GB) Dual Rank x8 PC3L-10600E (DDR3-1333) Unbuffered CAS-9 Low Voltage Memory Kit	647909-B21

**NOTE:** All DDR3 memory option kits consist of one DIMM per kit. For detailed memory configuration rules and guidelines, please use the Online DDR3 Memory Configuration Tool: [www.hp.com/go/ddr3memory-configurator](http://www.hp.com/go/ddr3memory-configurator).

##### HP Power Supplies

**NOTE:** Mixing of power supplies in the same server is not supported. All power supplies inside a server must be exactly the same model. Mixing Gold, Platinum, and Platinum Plus certified power supplies is not supported.

**NOTE:** Prior to making a power supply selection it is highly recommended that the HP Power Advisor is run to determine the right size power supply for your server configuration. The HP Power Advisor is located at: [www.hp.com/go/hppoweradvisor](http://www.hp.com/go/hppoweradvisor)

HP 350W Factory Integrated Power Supply Kit	674838-B21
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### Configuration Information - Factory Integrated Models

#### HP Common Slot Gold Power Supplies

**NOTE:** The following Power Supplies offer 92% Efficiency.

HP 460W Common Slot Gold Hot Plug Power Supply Kit	503296-B21
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#### Enablement Kit

HP 4U Redundant Power Supply Enablement Kit	675843-B21
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**NOTE:** The HP 4U Redundant Power Supply Enablement Kit (675843-B21) must be installed when using HP Common Slot power supplies.

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### Step 3: Choose Additional Factory Integratable Options

<b>HP Optical Drives</b>	HP Half-Height SATA DVD ROM JackBlack Optical Drive	624189-B21
	HP Half-Height SATA DVD RW JackBlack Optical Drive	624192-B21
<b>HP Insight Software</b>	HP Insight Control including 1yr 24x7 Support ProLiant ML/DL/BL-bundle Single Server FIO License	582765-B21
	HP Insight Control for Linux including 1yr 24x7 Support ML/DL Bundle 1 Server FIO License	TC203A

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### Step 4: Choose Additional Options for Factory Integration

**NOTE:** For additional options, please refer to the "Core Options" and "Additional Options" section below.

### Core Options

**NOTE:** Some options may not be integrated at the factory. Contact your local sales representative for additional information.

<b>HP Unique Options</b>	HP 4U 4 Large Form Factor Hot Plug Hard Drive Backplane Kit <b>NOTE:</b> The LFF Kit is a backplane kit designed for going from NHP LFF to hot-plug LFF.	674839-B21
	HP 4U 8 Small Form Factor Hot Plug Hard Drive Cage Kit <b>NOTE:</b> The SFF Kit is the cage plus backplane and designed to convert from any LFF configuration to SFF.	674841-B21
	HP 4U Redundant Power Supply Enablement Kit <b>NOTE:</b> The HP 4U Redundant Power Supply Enablement Kit (675843-B21) must be installed when using HP Common Slot power supplies.	675843-B21

### HP Memory

**NOTE:** To realize the performance memory capabilities listed in this document, HP SmartMemory is required. For additional information, please see the HP SmartMemory QuickSpecs at:  
[http://h18000.www1.hp.com/products/quickspecs/14225\\_na/14225\\_na.html](http://h18000.www1.hp.com/products/quickspecs/14225_na/14225_na.html)

#### Unbuffered with ECC DIMMs (UDIMMs)

HP 2GB (1x2GB) Single Rank x8 PC3-12800E (DDR3-1600) Unbuffered CAS-11 Memory Kit	669320-B21
HP 2GB (1x2GB) Single Rank x8 PC3L-10600E (DDR3-1333) Unbuffered CAS-9 Low Voltage Memory Kit	647905-B21
HP 4GB (1x4GB) Dual Rank x8 PC3-12800E (DDR3-1600) Unbuffered CAS-11 Memory Kit	669322-B21
HP 4GB (1x4GB) Dual Rank x8 PC3L-10600E (DDR3-1333) Unbuffered CAS-9 Low Voltage Memory Kit	647907-B21
HP 8GB (1x8GB) Dual Rank x8 PC3-12800E (DDR3-1600) Unbuffered CAS-11 Memory Kit	669324-B21
HP 8GB (1x8GB) Dual Rank x8 PC3L-10600E (DDR3-1333) Unbuffered CAS-9 Low Voltage Memory Kit	647909-B21

### HP Drive Cage Options

HP 4U 4 Large Form Factor Hot Plug Hard Drive Backplane Kit <b>NOTE:</b> The LFF Kit is a backplane kit designed for going from NHP LFF to hot-plug LFF.	674839-B21
HP 4U 8 Small Form Factor Hot Plug Hard Drive Cage Kit <b>NOTE:</b> The SFF Kit is the cage plus backplane and designed to convert from any LFF configuration to SFF.	674841-B21

### HP Optical Drives

HP Half-Height SATA DVD ROM JackBlack Optical Drive	624189-B21
HP Half-Height SATA DVD RW JackBlack Optical Drive	624192-B21

### HP Hard Drives

<b>NOTE:</b> The components of a storage subsystem (e.g. the drive, the HBA/controller, firmware, and the server backplane) should operate at the same data transfer rate or the system bandwidth will be negotiated down to an acceptable level for all components. <b>NOTE:</b> Hard drives have either a one year or three year warranty; refer to the specific	
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### Core Options

hard drive QuickSpecs for details.

#### SAS Hot Plug with SmartDrive SFF (2.5-inch) Enterprise Drives

HP 900GB 6G SAS 10K rpm SFF (2.5-inch) SC Enterprise 3yr Warranty Hard Drive	652589-B21
HP 600GB 6G SAS 10K rpm SFF (2.5-inch) SC Enterprise 3yr Warranty Hard Drive	652583-B21
HP 450GB 6G SAS 10K rpm SFF (2.5-inch) SC Enterprise 3yr Warranty Hard Drive	652572-B21
HP 300GB 6G SAS 10K rpm SFF (2.5-inch) SC Enterprise 3yr Warranty Hard Drive	652564-B21
HP 300GB 6G SAS 15K rpm SFF (2.5-inch) SC Enterprise 3yr Warranty Hard Drive	652611-B21
HP 146GB 6G SAS 15K rpm SFF (2.5-inch) SC Enterprise 3yr Warranty Hard Drive	652605-B21

#### SAS Hot Plug SmartDrive SFF (2.5-inch) Midline Drives

HP 1TB 6G SAS 7.2K rpm SFF (2.5-inch) SC Midline 1yr Warranty Hard Drive	652749-B21
HP 500GB 6G SAS 7.2K rpm SFF (2.5-inch) SC Midline 1yr Warranty Hard Drive	652745-B21

#### SAS Hot Plug SmartDrive LFF (3.5-inch) Enterprise Drives

HP 600GB 6G SAS 15K rpm LFF (3.5-inch) SC Enterprise 3yr Warranty Hard Drive	652620-B21
HP 450GB 6G SAS 15K rpm LFF (3.5-inch) SC Enterprise 3yr Warranty Hard Drive	652615-B21

#### SAS Hot Plug SmartDrive LFF (3.5-inch) Midline Drives

HP 3TB 6G SAS 7.2K rpm LFF (3.5-inch) SC Midline 1yr Warranty Hard Drive	652766-B21
HP 2TB 6G SAS 7.2K rpm LFF (3.5-inch) SC Midline 1yr Warranty Hard Drive	652757-B21

#### SAS Non-Hot Plug LFF (3.5-inch) Enterprise (ENT) Drives

HP 600GB 6G SAS 15K rpm LFF (3.5-inch) Non-hot Plug Dual Port Enterprise 3yr Warranty Hard Drive	516830-B21
HP 450GB 6G SAS 15K rpm LFF (3.5-inch) Non-hot Plug Dual Port Enterprise 3yr Warranty Hard Drive	516826-B21

**NOTE:** Please see the QuickSpecs for Technical Specifications and additional information:

[http://h18000.www1.hp.com/products/quickspecs/12244\\_na/12244\\_na.html](http://h18000.www1.hp.com/products/quickspecs/12244_na/12244_na.html)

#### 6G SATA Hot Plug with SmartDrive SFF (2.5-inch) Midline (MDL) Drives

HP 1TB 6G SATA 7.2K rpm SFF (2.5-inch) SC Midline 1yr Warranty Hard Drive	655710-B21
HP 500GB 6G SATA 7.2K rpm SFF (2.5-inch) SC Midline 1yr Warranty Hard Drive	655708-B21

#### 6G SATA Hot Plug with SmartDrive LFF (3.5-inch) Midline (MDL) Drives

HP 3TB 6G SATA 7.2K rpm LFF (3.5-inch) SC Midline 1yr Warranty Hard Drive	628061-B21
HP 2TB 6G SATA 7.2K rpm LFF (3.5-inch) SC Midline 1yr Warranty Hard Drive	658079-B21
HP 1TB 6G SATA 7.2K rpm LFF (3.5-inch) SC Midline 1yr Warranty Hard Drive	657750-B21
HP 500GB 6G SATA 7.2K rpm LFF (3.5-inch) SC Midline 1yr Warranty Hard Drive	658071-B21

#### 6G SATA Non-hot Plug LFF (3.5-inch) Midline (MDL) Drives

HP 3TB 6G SATA 7.2K rpm LFF (3.5-inch) Non-hot plug Midline 1yr Warranty Hard Drive	628065-B21
HP 2TB 6G SATA 7.2K rpm LFF (3.5-inch) Non-hot plug Midline 1yr Warranty Hard Drive	659339-B21
HP 1TB 6G SATA 7.2K rpm LFF (3.5-inch) Non-hot plug Midline 1yr Warranty Hard Drive	659337-B21
HP 500GB 6G SATA 7.2K rpm LFF (3.5-inch) Non-hot plug Midline 1yr Warranty Hard Drive	659341-B21

**NOTE:** SATA hard drives have a 1-year warranty. Please see the QuickSpecs for Technical Specifications and additional information:

[http://h18000.www1.hp.com/products/quickspecs/13021\\_na/13021\\_na.html](http://h18000.www1.hp.com/products/quickspecs/13021_na/13021_na.html)

### Core Options

#### **3G SATA MLC Hot Plug SFF (2.5-inch) Enterprise Mainstream Solid State Drives**

HP 100GB 3G SATA MLC SFF (2.5-inch) SC Enterprise Mainstream 3yr Warranty Solid State Drive 653112-B21

#### **3G SATA MLC Hot Plug LFF (3.5-inch) Enterprise Mainstream Solid State Drives**

HP 100GB 3G SATA MLC LFF (3.5-inch) SC Enterprise Mainstream 3yr Warranty Solid State Drive 653122-B21

**NOTE:** Please see the QuickSpecs for Technical Specifications and additional information:

[http://h18000.www1.hp.com/products/quickspecs/14038\\_na/14038\\_na.html](http://h18000.www1.hp.com/products/quickspecs/14038_na/14038_na.html)

#### **Hard Drive Kits**

**NOTE:** All Factory Integrated Models will be populated with sufficient hard drive blanks based on the number of initial hard drives ordered with the server.

**NOTE:** The part numbers for single HDD blanks below are provided should the customer require replacement HDD blanks for their server

HP LFF Gen8 Hard Drive Blank Kit 666986-B21

HP SFF Gen8 Hard Drive Blank Kit 666987-B21

### HP Networking

#### **Gigabit Ethernet adapters**

HP NC112T PCI Express Gigabit Server Adapter 503746-B21

HP NC365T 4-port Ethernet Server Adapter 593722-B21

HP Ethernet 1Gb 4-port 331T Adapter 647594-B21

HP Ethernet 1Gb 2-port 332T Adapter 615732-B21

HP Ethernet 1Gb 2-port 361T Adapter 652497-B21

#### **10 Gigabit Ethernet adapters**

HP NC523SFP 10Gb 2-port Server Adapter 593717-B21

HP NC552SFP 10Gb 2-port Ethernet Server Adapter 614203-B21

HP Ethernet 10Gb 2-port 530SFP Adapter 652503-B21

HP Ethernet 10Gb 2-port 560SFP+ Adapter 665249-B21

**NOTE:** Please see the QuickSpecs for Technical Specifications and additional information: [www.hp.com/go/ProLiantNICs](http://www.hp.com/go/ProLiantNICs)

### Core Options

#### HP Power Supplies

**NOTE:** Mixing of power supplies in the same server is not supported. All power supplies inside a server must be exactly the same model. Mixing Gold, Platinum, and Platinum Plus certified power supplies is not supported.

**NOTE:** Prior to making a power supply selection it is highly recommended that the HP Power Advisor is run to determine the right size power supply for your server configuration. The HP Power Advisor is located at: [www.hp.com/go/hppoweradvisor](http://www.hp.com/go/hppoweradvisor).

#### HP Common Slot Gold Power Supplies

**NOTE:** The following Power Supplies offer 92% Efficiency.

HP 460W Common Slot Gold Hot Plug Power Supply Kit

503296-B21

#### Enablement Kit

HP 4U Redundant Power Supply Enablement Kit

675843-B21

**NOTE:** The HP 4U Redundant Power Supply Enablement Kit (675843-B21) must be installed when using HP Common Slot power supplies.

**NOTE:** Option Kits for AC power supplies include the power supply and one PDU IEC cable.

**NOTE:** Power Specification and Technical Content for supported power supplies can be found at:

[http://h18000.www1.hp.com/products/quickspecs/14209\\_na/14209\\_na.html](http://h18000.www1.hp.com/products/quickspecs/14209_na/14209_na.html)

### Additional Options

**NOTE:** Some options may not be integrated at the factory. To ensure only valid configurations are ordered, HP recommends the use of an HP approved configurator. Contact your local sales representative for additional information.

<b>HP Management Hardware</b>	HP Dedicated iLO Management Port Kit	674845-B21
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<b>HP Insight Software</b>	<b>HP Insight Control</b>	
	HP Insight Control including 1yr 24x7 Technical Support and Updates Electronic License	T9074BAE
	HP Insight Control including 1yr 24x7 Support ProLiant ML/DL/BL-bundle Electronic License	TC278AAE
	HP Insight Control including 1yr 24x7 Technical Support and Updates Single Server License	452148-B22
	HP Insight Management Media Kit <b>NOTE:</b> HP Insight Management Media Kit contains DVDs without licenses. Contains HP Systems Insight Manager, HP Insight Control, HP Matrix Operating Environment, and Virtual Connect Enterprise Manager software. Uses an integrated installer to perform quick and accurate software installation and updates.	436222-B21
	<b>HP Insight Control Server Deployment</b> HP Insight Control Server Deployment Upgr to Insight Control including 1yr 24x7 Supp Electronic Lic	T9101ABE
	HP Insight Control Server Deployment including 1yr 24x7 Support Electronic License	T9082AAE
	HP Insight Control Server Deployment including 1yr 24x7 Support Single Server License <b>NOTE:</b> Electronic and Flexible-Quantity licenses can be used to purchase multiple licenses with a single activation key. <b>NOTE:</b> Customer will receive a license entitlement certificate. The license entitlement certificate must be redeemed online or via fax in order to obtain the license activation key(s). Includes one year of 24 x 7 HP Software Technical Support and Update Service. <b>NOTE:</b> Licenses ship without media. The HP Insight Management Media Kit can be ordered separately, or can be downloaded at: <a href="http://www.hp.com/go/insightupdates">http://www.hp.com/go/insightupdates</a> . <b>NOTE:</b> For additional license options please see the Insight Control QuickSpecs at: <a href="http://h18000.www1.hp.com/products/quickspecs/12631_na/12631_na.html">http://h18000.www1.hp.com/products/quickspecs/12631_na/12631_na.html</a>	452151-B21
	<b>HP Insight Control for Linux</b> HP Insight Control for Linux w/1yr 24x7 Supp ML/DL/SL Bundle Electronic 1 Svr LTU	TC203AAE
	HP Insight Control for Linux including 1yr 24x7 Support Electronic License	TC213AAE
	HP Insight Control for Linux including 1yr 24x7 Support Single Server License	TC209A
	HP Insight Control for Linux Media Kit <b>NOTE:</b> Media pack DVD contains the ISO image for HP Insight Control for Linux, HP Systems Insight Manager, HP Insight Control power management, HP Insight Control virtual machine management, and an integrated installer. Servers must be acquired separately. <b>NOTE:</b> Licenses ship without media. The Media Kit for Insight Control for Linux can be ordered separately, or can be downloaded at: <a href="http://www.hp.com/go/ic-linux">http://www.hp.com/go/ic-linux</a> (click on Download button). <b>NOTE:</b> Electronic and Flexible-Quantity licenses can be used to purchase multiple licenses with a single set of activation keys.	TC208A

### Additional Options

**NOTE:** For additional License Kits, including electronic licensing options, please see the QuickSpecs at:  
[http://h18000.www1.hp.com/products/quickspecs/13019\\_na/13019\\_na.html](http://h18000.www1.hp.com/products/quickspecs/13019_na/13019_na.html)

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#### HP iLO Advanced License    **HP Integrated Lights-Out (iLO) Advanced for ProLiant Remote Management**

HP iLO Advanced including 1yr 24x7 Technical Support and Updates Single Server License

512485-B21

**NOTE:** For more information, visit: <http://www.hp.com/go/ilo>.

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#### High Performance Clusters

##### **HP HPC Linux Value Pack**

HP High Performance Computing Linux Value Pack 1 Processor Flexible License for ProLiant Servers

TC293B

**NOTE:** This part number can be used to purchase one certificate for multiple licenses with a single activation key. Each license is for one socket (a.k.a. processor). Customer will receive a printed end user license agreement and license entitlement certificate via physical shipment. The license entitlement certificate must be redeemed online in order to obtain a license key.

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#### HP Security

##### HP Trusted Platform Module Option

488069-B21

**NOTE:** The TPM (Trusted Platform Module) is a microcontroller chip that can securely store artifacts used to authenticate the server platform. These artifacts can include passwords, certificates and encryption keys. Windows® BitLocker™ Drive Encryption (BitLocker) is a data protection feature available in Windows Server® 2008. BitLocker leverages the enhanced security capabilities of a Trusted Platform Module (TPM) version 1.2. The TPM works with BitLocker to help protect user data and to ensure that a server running Windows Server 2008 has not been tampered with while the system was offline. For more information about TPM, including a white paper, go to: [www.hp.com/go/TPM](http://www.hp.com/go/TPM).

**NOTE:** ProLiant OS pre-installed units will come with the partition required for TPM deployment.

**NOTE:** The TPM key is unique to every TPM deployed server and must be retained. Misplacing or losing the key could result in data loss.

### Additional Options

HP Storage Controllers	SAS Controllers	
	<b>HP Smart Array P222 Controller</b>	
	HP Smart Array P222/512 FBWC 6Gb 1-port Int/1-port Ext SAS Controller	631667-B21
	<b>HP Smart Array P420 Controller</b>	
	HP Smart Array P420/2GB FBWC 6Gb 2-ports Int SAS Controller	631671-B21
	HP Smart Array P420/1GB FBWC 6Gb 2-ports Int SAS Controller	631670-B21
	<b>HP Smart Array P421 Controller</b>	
	HP Smart Array P421/2GB FBWC 6Gb 2-ports Ext SAS Controller	631674-B21
	HP Smart Array P421/1GB FBWC 6Gb 2-ports Ext SAS Controller	631673-B21
	<b>Optional Upgrades</b>	
	HP 2GB P-series Smart Array Flash Backed Write Cache	631681-B21
	HP Smart Array Advanced Pack 2.0 No Media 1 Server 1yr 24x7 Support Software	BC377A
	HP Smart Array Advanced Pack 2.0 No Media Electronic Lic 1yr 24x7 Support Software	BC390AAE
	HP Smart Array Advanced Pack 2.0 No Media Flexible Qty 1yr 24x7 Support Software	BC390A
	<b>NOTE:</b> Please see the QuickSpecs for Technical Specifications and additional information: <a href="http://h18000.www1.hp.com/products/quickspecs/14227_div/14227_div.html">http://h18000.www1.hp.com/products/quickspecs/14227_div/14227_div.html</a> (Smart Array P222 Controller)	
	<a href="http://h18000.www1.hp.com/products/quickspecs/14228_div/14228_div.html">http://h18000.www1.hp.com/products/quickspecs/14228_div/14228_div.html</a> (Smart Array P420 Controller)	
	<a href="http://h18000.www1.hp.com/products/quickspecs/14229_div/14229_div.html">http://h18000.www1.hp.com/products/quickspecs/14229_div/14229_div.html</a> (Smart Array P421 Controller)	
	<a href="http://h18000.www1.hp.com/products/quickspecs/13200_div/13200_div.html">http://h18000.www1.hp.com/products/quickspecs/13200_div/13200_div.html</a> (Smart Array Advanced Pack)	
	<b>HP Host Bus Adapters</b>	
	HP H220 Host Bus Adapter	650933-B21
	HP H221 Host Bus Adapter	650931-B21
	HP H222 Host Bus Adapter	650926-B21
	<b>NOTE:</b> Please see the QuickSpecs for Technical Specifications and additional information: <a href="http://h18004.www1.hp.com/products/quickspecs/14336_div/14336_div.html">http://h18004.www1.hp.com/products/quickspecs/14336_div/14336_div.html</a> (HBA H220)	
	<a href="http://h18004.www1.hp.com/products/quickspecs/14222_div/14222_div.html">http://h18004.www1.hp.com/products/quickspecs/14222_div/14222_div.html</a> (HBA H221)	
	<a href="http://h18004.www1.hp.com/products/quickspecs/14337_div/14337_div.html">http://h18004.www1.hp.com/products/quickspecs/14337_div/14337_div.html</a> (HBA H222)	
	<b>SCSI HBA</b>	
	HP SC11Xe Ultra320 Single Channel/ PCIe x4 SCSI Host Bus Adapter	412911-B21
	<b>NOTE:</b> Please see the following QuickSpecs for additional information: <a href="http://h18000.www1.hp.com/products/quickspecs/12566_div/12566_div.html">http://h18000.www1.hp.com/products/quickspecs/12566_div/12566_div.html</a> (SC11Xe HBA)	

### Additional Options

<b>HP Backup &amp; Recovery Software</b>	HP Basic Upgrade to Data Protector Express V6 for 1 Server E-LTU	TC333BAE
	HP Data Protector Express V6.0 for 1 Server E-LTU	TC330BAE
	HP Data Protector Express V6.0 for 10 Server E-LTU	TC332BAE
	HP Data Protector Express V6.0 for 3 Server E-LTU	TC331BAE

**NOTE:** One of these Data Protector Express base products is required. To see available options: <http://www.hp.com/go/dataprotectorexpress>

### HP Disk Storage Systems Disk Enclosures

#### HP D2000 Disk Enclosures

HP D2600 Disk Enclosure	AJ940A
HP D2700 Disk Enclosure	AJ941A

**NOTE:** Please see the QuickSpecs for additional options and configuration information:  
[http://h18000.www1.hp.com/products/quickspecs/13404\\_na/13404\\_na.html](http://h18000.www1.hp.com/products/quickspecs/13404_na/13404_na.html)

### HP Tape Backup

**NOTE:** For the complete range of tape drives, autoloaders, libraries and media see:  
<http://www.hp.com/go/tape>. For hardware and software compatibility of HP tape backup products see: <http://www.hp.com/storage/SPOCK>.

HP DAT72 SCSI Internal Tape Drive	Q1522C
<b>NOTE:</b> Connection using HP SC11Xe Host Bus Adapter (412911-B21) recommended.	
HP DAT160 SCSI Internal Tape Drive	Q1573B
<b>NOTE:</b> Connection using HP SC11Xe Host Bus Adapter (412911-B21) recommended.	
HP Ultrium 920 SCSI Internal Tape Drive	EH841B
<b>NOTE:</b> Connection using HP SC11Xe Host Bus Adapter (412911-B21) recommended.	
HP LTO-4 Ultrium 1760 SCSI Internal Tape Drive	EH921B
<b>NOTE:</b> Connection using HP SC11Xe Host Bus Adapter (412911-B21) recommended.	
HP 1/8 G2 Ultrium 920 SAS Autoloader	AH558A
<b>NOTE:</b> Requires HP 1U Tape Autoloader Rack Kit (AH166A) for rack installation. Connection using HP Smart Array P222Controller (631667-B21) recommended.	
HP MSL2024 1 LTO-5 Ultrium 3000 SAS Tape Library	BL537A
<b>NOTE:</b> Connection using HP Smart Array P222Controller (631667-B21) recommended.	
HP MSL2024 Ultrium 920 SAS Tape Library	AH559A
<b>NOTE:</b> Connection using HP Smart Array P222Controller (631667-B21) recommended.	
HP Ultrium 448 SAS Internal Tape Drive	DW085B
<b>NOTE:</b> Connection using HP H222Host Bus Adapter (650926-B21) recommended.	
HP Ultrium 920 SAS Internal Tape Drive	EH847B
<b>NOTE:</b> Connection using HP H222Host Bus Adapter (650926-B21) recommended.	

### Additional Options

#### HP Disk Backup

**NOTE:** For the complete range of RDX drives and media see:  
<http://www.hp.com/go/rdx>. For hardware and software compatibility of HP disk backup products see: <http://www.hp.com/storage/SPOCK>.

#### HP D2D Backup Systems with Backup Data Deduplication

HP D2D2502i Backup System EJ001C

HP D2D2504i Backup System EJ002C

#### HP RDX Removable Disk Backup Systems USB

HP RDX1000 Internal Removable Disk Backup System BV847A

**NOTE:** 1 TB of disk capacity per data cartridge.

HP RDX320 Internal Removable Disk Backup System AJ767A

**NOTE:** 320GB of disk capacity per data cartridge.

HP RDX500 Internal Removable Disk Backup System AJ934A

**NOTE:** 500GB of disk capacity per data cartridge.

#### HP Uninterruptible Power Systems

##### HP Tower UPS

HP T1500 G3 1400VA NA Tower Uninterruptible Power System AF450A

**NOTE:** Please see the QuickSpecs for additional information:

[http://h18000.www1.hp.com/products/quickspecs/13160\\_na/13160\\_na.html](http://h18000.www1.hp.com/products/quickspecs/13160_na/13160_na.html)

##### HP Rack-mountable UPS

##### HP R1500 G3 Uninterruptible Power Supply (UPS)

HP R1.5kVA G3 1U NA Uninterruptible Power System AF469A

**NOTE:** Please see the QuickSpecs for additional information:

[http://h18000.www1.hp.com/products/quickspecs/14059\\_na/14059\\_na.html](http://h18000.www1.hp.com/products/quickspecs/14059_na/14059_na.html)

##### HP R/T3000 G2 Uninterruptible Power System (UPS)

HP R/T3000 G2 2U L530 Low Voltage NA/JP Uninterruptible Power System AF466A

HP R/T3000 G2 2U L620 High Voltage NA/JP Uninterruptible Power System AF467A

**NOTE:** Please see the QuickSpecs for additional information:

[http://h18000.www1.hp.com/products/quickspecs/14058\\_na/14058\\_na.html](http://h18000.www1.hp.com/products/quickspecs/14058_na/14058_na.html)  
(Worldwide)

##### R5000 Uninterruptible Power System (UPS)

HP R5KVA 3U L630 High Voltage NA/JP Uninterruptible Power System AF460A

**NOTE:** Please see the QuickSpecs for additional information:

[http://h18000.www1.hp.com/products/quickspecs/14109\\_na/14109\\_na.html](http://h18000.www1.hp.com/products/quickspecs/14109_na/14109_na.html)

##### R7000 Uninterruptible Power System (UPS)

HP R7KVA 4U 50A High Voltage NA/JP Uninterruptible Power System AF462A

**NOTE:** Please see the QuickSpecs for additional information:

[http://h18000.www1.hp.com/products/quickspecs/14110\\_na/14110\\_na.html](http://h18000.www1.hp.com/products/quickspecs/14110_na/14110_na.html)

**NOTE:** For additional information on HP Uninterruptible Power Systems please go to:  
[www.hp.com/servers/rackups](http://www.hp.com/servers/rackups).

**NOTE:** For additional information on sizing your server, please reference:  
<http://www.upssizer.com>.

### Additional Options

**NOTE:** Please see the UPS and PDU cable matrix's on the HP Power Protection and Management page. Under Power Cords, click on the "HP Power Cord Matrix" link. That link will list cable descriptions, requirements, and specifications for UPS and PDU units. Please see the following link: [www.hp.com/products/powercords](http://www.hp.com/products/powercords).

<b>HP Power Distribution Units</b>	<b>Monitored PDUs</b>	
	<b>HP Monitored Power Distribution Unit: Full Rack Version</b>	
	HP 17.3kVA 24A Dual Three Phase NA/JP Monitored Power Distribution Unit	AF503A
	<b>HP Monitored Power Distribution Unit: Half Rack Version</b>	
	HP 4.9kVA 24A Single Input Single Phase NA/JP Monitored Power Distribution Unit	AF914A
	<b>NOTE:</b> Please see the QuickSpecs for Technical Specifications and additional information: <a href="http://h18000.www1.hp.com/products/quickspecs/12118_na/12118_na.html">http://h18000.www1.hp.com/products/quickspecs/12118_na/12118_na.html</a>	
	<b>NOTE:</b> Please see the UPS and PDU cable matrix's on the HP Power Protection and Management page. Under Power Cords, click on the "HP Power Cord Matrix" link. That link will list cable descriptions, requirements, and specifications for UPS and PDU units. Please see the following link: <a href="http://www.hp.com/products/powercords">www.hp.com/products/powercords</a> .	
<b>HP Rack Options</b>	<b>HP USB Keyboard and Mouse</b>	
	HP USB BFR with PVC Free US Keyboard/Mouse Kit	631341-B21
	<b>NOTE:</b> Please see the QuickSpecs for Technical Specifications and additional information: <a href="http://h18000.www1.hp.com/products/quickspecs/13792_na/13792_na.html">http://h18000.www1.hp.com/products/quickspecs/13792_na/13792_na.html</a>	
	<b>HP Server Console Switches</b>	
	HP Server Console 0x2x8 Port Analog Switch	AF616A
	HP Server Console 0x2x16 Port Analog Switch	AF617A
	<b>NOTE:</b> Please see the QuickSpecs for Technical Specifications and additional information: <a href="http://h18000.www1.hp.com/products/quickspecs/11834_na/11834_na.html">http://h18000.www1.hp.com/products/quickspecs/11834_na/11834_na.html</a>	
	<b>HP Server Console Switch G2 with Virtual Media &amp; CAC</b>	
	HP 0x2x16 KVM Server Console Switch G2 with Virtual Media CAC Software	AF618A
	HP 0x2x32 KVM Server Console Switch G2 with Virtual Media CAC Software	AF619A
	<b>NOTE:</b> Please see the QuickSpecs for Technical Specifications and additional information: <a href="http://h18000.www1.hp.com/products/quickspecs/13475_na/13475_na.html">http://h18000.www1.hp.com/products/quickspecs/13475_na/13475_na.html</a>	
	<b>HP IP Console Switch G2 with Virtual Media &amp; CAC</b>	
	HP 1x1Ex8 KVM IP Console Switch G2 with Virtual Media CAC Software	AF620A
	HP 2x1Ex16 KVM IP Console Switch G2 with Virtual Media CAC Software	AF621A
	HP 4x1Ex32 KVM IP Console Switch G2 with Virtual Media CAC Software	AF622A
	<b>NOTE:</b> Please see the QuickSpecs for Technical Specifications and additional information: <a href="http://h18000.www1.hp.com/products/quickspecs/13474_na/13474_na.html">http://h18000.www1.hp.com/products/quickspecs/13474_na/13474_na.html</a>	

### Additional Options

<b>HP USB and SD Options</b>	HP 4GB Secure Digital High Capacity Flash Media Kit <b>NOTE:</b> Blank SD media device is supported for use with VMware and Citrix. SD media must be installed in the internal slot of the ProLiant server. Learn more at <a href="http://www.hp.com/go/proliantvirtualization">http://www.hp.com/go/proliantvirtualization</a> .	580387-B21
<b>HP Care Pack Services</b>	HP 3 year 24 hour Call to Repair 24x7 ProLiant ML310e Hardware Support HP 3 year 24 hour Call to Repair 24x7 w/ Defective Media Retention ProLiant ML310e Hardware Support HP 3 year 4 hour 13x5 ProLiant ML310e Hardware Support HP 3 year 4 hour 13x5 with Defective Media Retention ProLiant ML310e Hardware Support HP 3 year 4 hour 24x7 ProLiant ML310e Collaborative Support HP 3 year 4 hour 24x7 ProLiant ML310e Hardware Support HP 3 year 4 hour 24x7 ProLiant ML310e Proactive Care Service HP 3 year 4 hour 24x7 with Defective Media Retention ProLiant ML310e Collaborative Support HP 3 year 4 hour 24x7 with Defective Media Retention ProLiant ML310e Hardware Support HP 3 year 4 hour 24x7 with Defective Media Retention ProLiant ML310e Proactive Care Service HP 3 year 6 hour Call to Repair 24x7 ProLiant ML310e Collaborative Support HP 3 year 6 hour Call to Repair 24x7 ProLiant ML310e Hardware Support HP 3 year 6 hour Call to Repair 24x7 ProLiant ML310e Proactive Care Service HP 3 year 6 hour CalltoRepair 24x7 w/Defective Media Retention ProLiant ML310e Collaborative Support HP 3 year 6 hour Call to Repair 24x7 with Defective Media Retention ProLiant ML310e Hardware Support HP 3 year 6 hour Call to Repair 24x7 w/ Defective Media Retention ProLiant ML310e Proactive Care SVC HP 3 year Next business day ProLiant ML310e Collaborative Support HP 3 year Next business day ProLiant ML310e Hardware Support HP 3 year Next business day ProLiant ML310e Proactive Care Service HP 3 year Next business day with Defective Media Retention ProLiant ML310e Collaborative Support HP 3 year Next business day with Defective Media Retention ProLiant ML310e Hardware Support HP 3 year Next business day with Defective Media Retention ProLiant ML310e Proactive Care Service HP Install ProLiant ML310e Service HP Installation Non Standard Hours ProLiant ML310e Service HP Startup ProLiant ML310e Service HP Startup non Standard Hours ProLiant ML310e Service	U6G25E U6G26E U6F67E U6F68E U6F71E U6F69E U6F73E U6F72E U6F70E U6F74E U6F77E U6F75E U6F79E U6F78E U6F76E U6F80E U6F63E U6F61E U6F65E U6F64E U6F62E U6F66E U6G21E U6G22E U6G23E U6G24E

### Additional Options

**NOTE:** For more information, customer/resellers can contact:  
<http://www.hp.com/services/carepack>

### Memory

**NOTE:** Memory configurations listed do not apply to "Factory Integrated Models".

#### HP SmartMemory

New HP SmartMemory now provides additional protection for your servers. With HP Authentication it can verify that you have true HP Qualified Memory in your HP ProLiant Gen8 server. With HP SmartMemory your new HP ProLiant server can take advantage of additional Gen8 enhancements in performance, durability and future manageability support through HP Active Health System

#### DDR3 memory population guidelines

For detailed memory configuration rules and guidelines, please use the Online DDR3 Memory Configuration Tool:

[www.hp.com/go/ddr3memory-configurator](http://www.hp.com/go/ddr3memory-configurator)

General Guidelines:

- The HP ProLiant ML310e Gen8 Server has four memory slots
- There are two channels per server with two DIMM slots per channel
- Memory channel 1 consists of the two (2) DIMMs that are closest to the processor
- Memory channel 2 consists of the two (2) DIMMs that are furthest from the processor
- Different types of processors have different types of memory support.
- Support for single/dual-rank 1333/1600 MT/s ECC UDIMM (unbuffered DIMMs)
- The server supports up to 32 GB (4 x 8-GB) for Unbuffered DIMMs
- No support for RDIMMs; Non-ECC UDIMMs
- Do not install DIMMs if the processor is not installed
- Populate DIMMs from heaviest load (double-rank) to lightest load (single-rank)
- Non-ECC DIMMs are not supported
- Always use HP qualified DIMMs

#### ML310e Gen8 Supported Memory Bandwidth and Capacity

DIMM Type	Unbuffered with ECC DIMMs (UDIMMs)					
	Single Rank (1R)		Dual Rank (2R)			
DIMM Rank	2GB	2GB	4GB	4GB	8GB	8GB
DIMM Capacity	2GB	2GB	4GB	4GB	8GB	8GB
DIMM Native Speed (MHz)	1333	1600	1333	1600	1333	1600
Voltage	LV	Std	LV	Std	LV	Std
<b>SLOTS THAT CAN BE POPULATED</b>						
4 slot servers	4	4	4	4	4	4
<b>MAXIMUM CAPACITY (GB)*</b>						
	8	8	16	16	32	32
<b>POPULATED DIMM SPEED (MHz)</b>						
1 DIMM Per Channel	1333	1600	1333	1600	1333	1600
2 DIMM Per Channel	1333**	1600	1333**	1600	1333**	1600

**NOTE:** Memory speed is a function of the processor QPI bus speed. To realize the performance memory capabilities listed above HP SmartMemory is required.

\* Maximum capacity will vary based on individual server platform qualification schedule

\*\* For HP SmartMemory, UDIMM is supported at 2DPC@1333 at 1.35V. Third party memory may only support up to 2DPC@1066 at 1.5V.

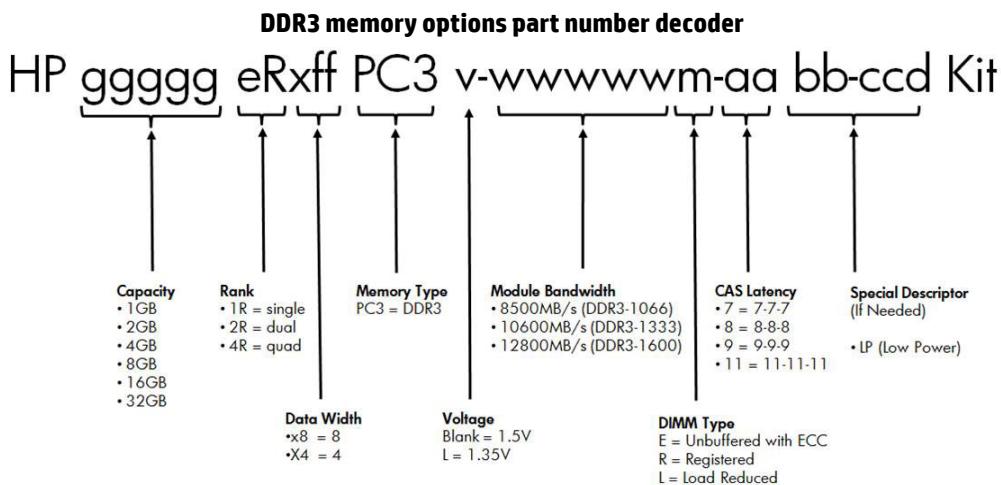
### Memory

Memory		Slot			
		DIMM1C	DIMM2A	DIMM3D	DIMM4B
<b>Standard</b> (Base Model)	<b>2 GB</b>	Empty	2 GB	Empty	Empty
<b>Standard</b> (Performance Model)	<b>4 GB</b>	Empty	4 GB	Empty	Empty
<b>Maximum</b>	<b>32 GB</b>	8 GB	8 GB	8 GB	8 GB

Memory Speed by Processor Model	
Processor Models	Supported Memory Speeds
E3-1220Lv2, E3-1220v2, E3-1230v2, E3-1240v2, E3-1270v2, E3-1280v2, i3-3240, i3-3220	1600/1333/1066MHz
G2120	1333/1066MHz
G540	1066MHz

**NOTE:** Capacity references are rounded to the common Gigabyte values.

- 2GB = 2048MB
- 4GB = 4096MB
- 8GB = 8192MB



Following are memory options available from HP:

#### HP Memory

#### Unbuffered with ECC DIMMs (UDIMMs)

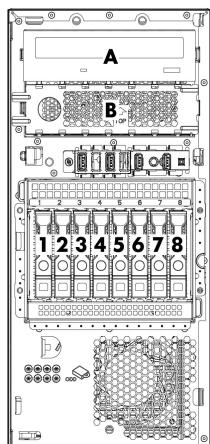
HP 2GB (1x2GB) Single Rank x8 PC3-12800E (DDR3-1600) Unbuffered CAS-11 Memory Kit	669320-B21
HP 2GB (1x2GB) Single Rank x8 PC3L-10600E (DDR3-1333) Unbuffered CAS-9 Low Voltage Memory Kit	647905-B21
HP 4GB (1x4GB) Dual Rank x8 PC3-12800E (DDR3-1600) Unbuffered CAS-11 Memory Kit	669322-B21

### Memory

HP 4GB (1x4GB) Dual Rank x8 PC3L-10600E (DDR3-1333) Unbuffered CAS-9 Low Voltage Memory Kit	647907-B21
HP 8GB (1x8GB) Dual Rank x8 PC3-12800E (DDR3-1600) Unbuffered CAS-11 Memory Kit	669324-B21
HP 8GB (1x8GB) Dual Rank x8 PC3L-10600E (DDR3-1333) Unbuffered CAS-9 Low Voltage Memory Kit	647909-B21

**NOTE:** All DDR3 memory option kits consist of one DIMM per kit. For detailed memory configuration rules and guidelines, please use the Online DDR3 Memory Configuration Tool: [www.hp.com/go/ddr3memory-configurator](http://www.hp.com/go/ddr3memory-configurator).

### Storage

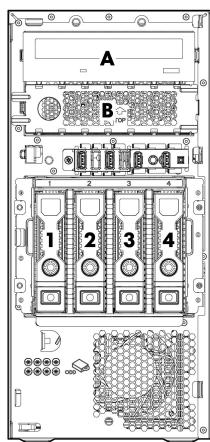


1 - 8      8 x 2.5" (SFF) SAS/SATA hard drive bays

A      Removable Optical Drive

B      Removable Optical Drive

**NOTE.** Once Redundant Power Supply is installed, Bay A will be the only media bay available for use.



1 - 4      4 x 3.5" (LFF) SAS/SATA hard drive bays

A      Removable Optical Drive

B      Removable Optical Drive

**NOTE.** Once Redundant Power Supply is installed, Bay A will be the only media bay available for use.

### External Storage

	Quantity Supported	Position Supported	Controller
D2600 Disk Enclosure	Up to 4	External	HP Smart Array P222/512MB FBWC Controller
	Up to 8	External	HP Smart Array P421/1GB FBWC Controller HP Smart Array P421/2GB FBWC Controller
D2700 Disk Enclosure	Up to 4	External	HP Smart Array P222/512MB FBWC Controller
	Up to 8	External	HP Smart Array P421/1GB FBWC Controller HP Smart Array P421/2GB FBWC Controller

### Tape and Disk-Based Backup

**NOTE:** For the complete range of tape drives, autoloaders, libraries and media, including the internal fitting models, see: <http://www.hp.com/go/tape>. For the complete range of D2D Backup Systems see: <http://www.hp.com/go/d2d>. For the complete range of RDX drives and media see: <http://www.hp.com/go/rdx>. For hardware and software compatibility of HP disk and tape backup products see: <http://www.hp.com/storage/SPOCK>.

### Storage

	<b>Position Supported</b>	<b>Controller</b>	<b>Controller/HBA Option Kit Part Number</b>
<b>HP USB Tape Drives</b> DAT 72 DAT 160	Internal or External	USB 2.0 Port	N/A
<b>HP USB Rack Mount Kits</b> 1U USB Rack-Mount Kit	External	USB 2.0 Port	
<b>HP SAS Tape Drives</b> DAT 160 LTO-2 Ultrium 448 LTO-3 Ultrium 920 LTO-4 Ultrium 1760 LTO-4 Ultrium 1840 LTO-5 Ultrium 3000 LTO-5 Ultrium 3280	Internal or External	HP Smart Array P222/512 FBWC 6Gb 1-port Int/1-port Ext SAS Controller <b>NOTE:</b> Please check the full compatibility information at: <a href="http://www.hp.com/storage/SPOCK">http://www.hp.com/storage/SPOCK</a>	631667-B21
<b>HP SAS Rack Mount Kits</b> 1U Rack-Mount Kit 3U Rack-Mount Kit	External	HP Smart Array P222/512 FBWC 6Gb 1-port Int/1-port Ext SAS Controller <b>NOTE:</b> Please check the full compatibility information at: <a href="http://www.hp.com/storage/SPOCK">http://www.hp.com/storage/SPOCK</a>	631667-B21
<b>HP SAS Tape Autoloaders and Libraries</b> 1/8 G2 Autoloader MSL2024 MSL4048 MSL8096	External	HP Smart Array P222/512 FBWC 6Gb 1-port Int/1-port Ext SAS Controller <b>NOTE:</b> Please check the full compatibility information at: <a href="http://www.hp.com/storage/SPOCK">http://www.hp.com/storage/SPOCK</a>	631667-B21
<b>HP Fibre Channel Tape Libraries</b> MSL2024 MSL4048 MSL8096	External	Please consult the EBS connectivity matrix at: <a href="http://www.hp.com/go/ebs">http://www.hp.com/go/ebs</a> for connectivity information and the supported Fibre Channel HBAs shown in this QuickSpec.	
<b>HP USB RDX Removable Disk Backup System</b> RDX160 RDX320 RDX500 RDX1TB	Internal or External	USB 2.0 port	N/A

### Storage

**HP D2D Backup Systems, iSCSI** External Embedded Network Controller. If the server requires a hardware iSCSI initiator, the QLogic QLA4050 Host Bus Adapter is recommended.  
D2D2500i  
D2D4000i

**HP D2D Backup Systems, Fibre Channel** External Direct server attach is not supported, requires connection via SAN fabric. See: <http://www.hp.com/storage/SPOCK>  
D2D4000fc

### Technical Specifications

<b>System Unit</b>	<b>Tower Dimensions</b> (H x W x D) (with feet/bezel)	14.5 x 6.89 x 18.71 in (36.82 x 17.5 x 47.52 cm)
	<b>Tower Weight</b> (approximate)	Maximum (all hard drives, power supplies, and processors installed)  Minimum (one hard drive, power supply, and processor installed)
	<b>Input Requirements</b> (per power supply)	Rated Line Voltage 100 to 240 VAC Rated Input Current 7.1 Amps (at 120VAC) to 3.5 Amps (at 240 VAC) Rated Input Frequency 50 to 60 Hz Rated Input Power 486 W
	<b>BTU Rating</b>	Maximum 460W - 1773 BTU / hr (at 120 VAC), 1715 (at 240 VAC)
	<b>Power Supply Output</b> (per power supply)	Rated Steady-State Power 350 W (at 100 VAC), 350 W (at 200 VAC)  Maximum Peak Power 350 W (at 100 VAC), 350 W (at 200 VAC)
	<b>System Inlet Temperature</b>	Operating  10° to 35°C (50° to 95°F) at sea level with an altitude derating of 1.0°C per every 304.8 m (1.8°F per every 1000 ft) above sea level to a maximum of 3048 m (10,000 ft), no direct sustained sunlight. Maximum rate of change is 10°C/hr (18°F/hr). The upper limit may be limited by the type and number of options installed. System performance may be reduced if operating with a fan fault or above 30°C (86°F).  Non-operating  -30° to 60°C (-22° to 140°F). Maximum rate of change is 20°C/hr (36°F/hr).
	<b>Relative Humidity</b> (non-condensing)	Operating  10 to 90% relative humidity (Rh), 28°C (82.4°F) maximum wet bulb temperature, non-condensing.  Non-operating  5 to 95% relative humidity (Rh), 38.7°C (101.7°F) maximum wet bulb temperature, non-condensing.
	<b>Altitude</b>	Operating  3048 m (10,000 ft). This value may be limited by the type and number of options installed. Maximum allowable altitude change rate is 457 m/min (1500 ft/min).  Non-operating  9144 m (30,000 ft). Maximum allowable altitude change rate is 457 m/min (1500 ft/min).
	<b>Acoustic Noise</b>	Listed are the declared A-Weighted sound power levels (LWAd) and declared average bystander position A-Weighted sound pressure levels (LpAm) when

### Technical Specifications

the product is operating in a 23°C ambient environment. Noise emissions were measured in accordance with ISO 7779 (ECMA 74) and declared in accordance with ISO 9296 (ECMA 109).

#### Idle

L WAd	4.3 B
L pAm	26dB-A

#### Operating

L WAd	4.4 B
L pAm	28dB-A

**NOTE:** The Listed sound levels apply to standard shipping configurations. Additional options may result in increased sound levels.

<b>Emissions Classification (EMC)</b>	<b>FCC Rating</b>	Class B
	<b>Normative Standards</b>	CISPR 22; EN55022; EN55024; FCC CFR 47, Pt 15; ICES-003; CNS13438; GB9254; K22;K24; EN 61000-3-2; EN 61000-3-3; EN 60950-1; IEC 60950-1

**NOTE:** Product conformance to cited product specifications is based on sample (type) testing, evaluation, or assessment. This product or family of products is eligible to bear the appropriate compliance logos and statements.

<b>HP Dynamic Smart Array B120i Controller</b>	<b>Dimensions</b>	Embedded
	<b>Disk Drive and Enclosure Interface - Transfer rate</b>	Up to 3Gb/s SATA (Serial Attached SCSI)
	<b>SATA Connectors</b>	6 internal connectors w/hot plug support
	<b>Server Interface</b>	PCIe 2.0
	<b>SATA Speed</b>	3Gb/s SATA links
	<b>Cache Memory</b>	None
	<b>Logical Drives Supported</b>	Zero Memory, Up to 2 logical volumes (6 physical drives)
	<b>Host Memory Addressing</b>	64-bit, supporting greater than 4GB server memory space
	<b>Hot Plug Support</b>	Yes
	<b>RAID Support</b>	RAID 0 (Striping), RAID 1 (Mirroring) RAID 1+0 (Striping & Mirroring)

### Technical Specifications

<b>HP Ethernet 1Gb 2-port 330i Adapter</b>	<b>Network Interface</b>	10Base-T/100Base-TX/1000Base-TX
	<b>Compatibility</b>	IEEE 802.3 10Base-T IEEE 802.3ab 1000Base-T IEEE 802.3u 100Base-TX
	<b>Data Transfer Method</b>	PCI-e, two lanes (x2)
	<b>Controller</b>	BCM5717
	<b>Network Transfer Rate</b>	10Base-T (Half-Duplex) 10 Mb/s per port, 20 Mb/s Combined 10Base-T (Full-Duplex) 20 Mb/s per port, 40 Mb/s Combined 100Base-TX (Half-Duplex) 100 Mb/s per port, 200 Mb/s Combined 100Base-TX (Full-Duplex) 200 Mb/s per port, 400 Mb/s Combined 1000Base-TX (Half-Duplex) 1000Mb/s per port, 2000 Mb/s Combined 1000 Base-TX (Full-Duplex) 2000Mb/s per port, 4000 Mb/s Combined
	<b>Connector</b>	RJ-45
	<b>Cable Support</b>	10Base-T Categories 3, 4 or 5 UTP; up to 328 ft (100 m) 10/100/1000Base-TX Category 5 or better; up to 328 ft (100 m)

<b>Environment-friendly Products and Approach</b>	<b>End-of-life Management and Recycling</b>	Hewlett-Packard offers end-of-life HP product return, trade-in, and recycling programs in many geographic areas. For trade-in information, please go to: <a href="http://www.hp.com/go/green">http://www.hp.com/go/green</a> . To recycle your product, please go to: <a href="http://www.hp.com/go/green">http://www.hp.com/go/green</a> or contact your nearest HP sales office. Products returned to HP will be recycled, recovered or disposed of in a responsible manner.
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The EU WEEE directive (2002/95/EC) requires manufacturers to provide treatment information for each product type for use by treatment facilities. This information (product disassembly instructions) is posted on the Hewlett Packard web site at: <http://www.hp.com/go/green>. These instructions may be used by recyclers and other WEEE treatment facilities as well as HP OEM customers who integrate and re-sell HP equipment.

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For hard drives, 1GB = 1 billion bytes. Actual formatted capacity is less.